

What is claimed is:

1. An adaptive filter to suppress repetitive high-frequency information in an image comprising pixels, the image having repetitive high-frequency information, comprising:
  - decision circuitry to identify the repetitive high-frequency information in at least a subset of the pixels of the image to provide a repetitive-sequence signal;
  - a low-pass filter to filter the image to produce low-pass filtered pixels; and
  - a switch to output the pixels of the image as adaptive-filter output, and in response to the repetitive-sequence signal, to output the low-pass filtered pixels as the adaptive-filter output.
2. The adaptive filter of claim 1 wherein the low-pass filter filters the pixels of the image by averaging a predetermined number of pixels.
3. The adaptive filter of claim 1 wherein the decision circuitry disables the repetitive-sequence signal at the beginning of a scan line.
4. The adaptive filter of claim 1 wherein a transition has a sign, and a transition is indicated when a difference in luminance between two pixels exceeds a predetermined transition value and that difference has a sign that is different from the sign of a previous transition value, and the decision circuitry identifies a repetitive sequence when at

least a predetermined number transitions occur in a sequence of pixels having a predetermined number of pixels.

5. The adaptive filter of claim 1, wherein a transition has a sign, and a transition is indicated when a difference in luminance between two adjacent pixels exceeds a predetermined transition value and a sign of that difference is different from the sign of a previous transition value, and a sequence of pixels is associated with a respective sequence of transitions, the sequence of transitions having a predetermined number of zones, and the decision circuitry activates the repetitive-sequence signal when each zone has one or more transitions.

6. The adaptive filter of claim 5 wherein the decision circuitry deactivates the repetitive-sequence signal when one or more zones have no transitions.

7. The adaptive filter of claim 1 wherein the image is a video image.

8. A video transmitter system comprising:  
an adaptive filter to suppress at least a portion of repetitive high-frequency information from a video signal to provide an adaptive-filter video signal;  
a compression engine to compress the adaptive-filter video signal to provide a compressed video signal; and

9 a network interface to transmit the  
10 compressed video signal over a transmission medium.

1 9. The video transmitter system of claim 8 wherein  
2 the adaptive filter comprises:

3 decision circuitry to identify the repetitive  
4 high-frequency information in the video signal to  
5 provide a repetitive-sequence signal;

6 a low-pass filter to filter the video signal to  
7 produce a low-pass filtered video signal; and

8 a switch to output the video signal as the  
9 adaptive filter video signal, and in response to the  
10 repetitive-sequence signal, to output the low-pass  
11 filtered video signal as the adaptive-filter video  
12 signal.

1 10. The video transmitter system of claim 9 wherein  
2 the video signal is a digital video signal comprising  
3 pixel values, and the low-pass filter filters the  
4 digital video signal by averaging a first predetermined  
5 number of pixel values.

1 11. The video transmitter system of claim 9 wherein  
2 the decision circuitry is reset to disable the  
3 repetitive-sequence signal at the beginning of each  
4 scan line.

1 12. The video transmitter system of claim 9 wherein a  
2 transition has a sign, and the decision circuitry  
3 indicates a transition when a difference in luminance  
4 between two pixels exceeds a predetermined transition  
5 value and the sign of that difference is different from

the sign of a previous transition, and activates the repetitive-sequence signal when at least a predetermined number of transitions occur in a sequence of pixels having a predetermined number of pixels.

13. A method for suppressing repetitive high-frequency information in a video image having repetitive high-frequency information, the video image having pixels represented as video image data, comprising:  
identifying repetitive high-frequency information in the video image data;  
low-pass filtering the video image data to produce low-pass filtered video image data; and  
when the repetitive high-frequency information is identified, outputting the low-pass filtered video image data as adaptive-filter image data, otherwise outputting the unmodified video image data as the adaptive-filter image data.

14. The method of claim 13 wherein the video image data comprises grayscale values; and wherein said low-pass filtering averages a subset of the grayscale values to produce at least a subset of the adaptive filter image data.

15. The method of claim 13 wherein the video image data is color video data having an luminance component and a color component; and wherein said low-pass filtering modifies a subset of luminance components to produce at least a subset of the adaptive-filter image data.

1 16. The method of claim 13 wherein said identifying  
2 identifies repetitive high-frequency information in the  
3 video image when a difference in luminance between two  
4 pixels is greater than or equal to a predetermined  
5 threshold for a predetermined number of pixels.

1 17. The method of claim 13 wherein said identifying  
2 identifies non-repetitive information, and further  
3 comprising:

4 passing the video image data when repetitive  
5 high-frequency information is not identified.

1 18. The method of claim 13 wherein a transition has a  
2 sign and said identifying identifies a transition when  
3 a difference in luminance between two pixels exceeds a  
4 predetermined transition value and the sign of that  
5 difference is different from the sign of a previous  
6 transition, and identifies a repetitive sequence when  
7 at least a predetermined number transitions occur in a  
8 sequence of pixels having a predetermined number of  
9 pixels.

1 19. The method of claim 13 wherein a transition has a  
2 sign, and said identifying identifies a transition a  
3 difference in luminance between two adjacent pixels  
4 exceeds a predetermined transition value and a sign of  
5 that difference is different from a sign of a previous  
6 transition, and a sequence of pixels is associated with  
7 a respective sequence of transitions, the sequence of  
8 transitions having a predetermined number of zones, and  
9 said identifying identifies the high-frequency

repetitive information when each zone has one or more transitions.

20. The method of claim 19 wherein said identifying does not identify repetitive high-frequency information when one or more zones have no transitions.

21. An adaptive filter to suppress repetitive high-frequency information in an image comprising pixels, the image having repetitive high-frequency information, comprising:

means for identifying the repetitive high-frequency information in at least a subset of the pixels of the image to provide a repetitive-sequence signal;

means for filtering the image to produce low-pass filtered pixels; and

means for outputting the pixels of the image as adaptive-filter output, and in response to the repetitive-sequence signal, outputting the low-pass filtered pixels as the adaptive-filter output.

22. The adaptive filter of claim 21 wherein the means for filtering filters the pixels of the image by averaging a predetermined number of pixels.

23. The adaptive filter of claim 21 wherein the means for identifying disables the repetitive-sequence signal at the beginning of a scan line.

24. The adaptive filter of claim 21 wherein a transition has a sign, and the means for identifying

3 indicates a transition when a difference in luminance  
4 between two pixels exceeds a predetermined transition  
5 value and a sign of that difference is different from a  
6 sign of a previous transition, and the means for  
7 identifying identifies a repetitive sequence when at  
8 least a predetermined number transitions occur in a  
9 sequence of pixels having a predetermined number of  
10 pixels.

1 25. The adaptive filter of claim 21, wherein a  
2 transition has a sign, and the means for identifying  
3 indicates a transition when a difference in luminance  
4 between two adjacent pixels exceeds a predetermined  
5 transition value and a sign of that difference is  
6 different from a sign of a previous transition, and a  
7 sequence of pixels is associated with a respective  
8 sequence of transitions, the sequence of transitions  
9 having a predetermined number of zones, and the  
10 decision circuitry activates the repetitive-sequence  
11 signal when each zone has one or more transitions.

1 26. The adaptive filter of claim 25 wherein the means  
2 for identifying deactivates the repetitive-sequence  
3 signal when one or more zones have no transitions.

1 27. The adaptive filter of claim 21 wherein the image  
2 is a video image.